



## Orchid Abundance in Decline Throughout Catoclin Mountains

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Figure 1. Greater yellow lady's slipper. Photo by Teresa Prendusi, USDA Forest Service.

Early this winter and sometime after hunting season, I started to contemplate how much the characteristics of our forests are altered by deer. Actually, I'm frequently reminded of this fact: whenever I'm hunting near the Cacapon River where the towering forests are nearly devoid of understory, or when I'm looking out my back door where I live in Harpers Ferry. That historic town is a place where the mosaic of residential and Federally-owned National Historic Park Land means that deer roam freely with no wild or human predators. Growing a garden in Harpers Ferry is impossible without absurd amounts of fencing.

Typically, I think in generalities when I consider about how aggressively the deer browse our forests, i.e., more deer equals less vegetation. In reality, feeding deer have their preferences, and will eat their favorite foods first. When the preferred food is a rare plant, it can result in a serious natural resource problem. For example, I discovered a scientific article about orchids written by Wesley M. Knapp and Richard Wiegand and published in the *Journal of Diversity and Conservation* (July 2014, Volume 23, Issue 8, pp 1965-1976). This article titled [Orchid \(Orchidaceae\) decline in the Catoclin Mountains, Frederick County, Maryland as documented by a long-term dataset](#), was a clear reminder that deer browsing can have a drastic effect on some plant species, even causing declines that threaten local extirpation.

The study was based on survey data of 21 species of orchids collected over 41 years (1968-2008) in the Catoclin Mountains. Overall, 19 of the 21 species showed precipitous declines, with three species undetected altogether from spots where they were known to occur. The greater yellow lady's slipper, *Cypripedium parviflorum* var. *pubescens* (Figure 1) was one of the species that was present during much of the study period, but could not be found by 2008. Other species such as the large purple fringed

orchid, *Platanthera grandiflora* (Figure 2) is still present throughout the Catoclin Mountains, but has declined by 51% over the study period.



Figure 2. Large purple fringed orchid. Photo Richard Wiegand.

Knapp and Wiegand considered other causes besides deer herbivory to explain the orchid decline, but concluded that the evidence brought them back to deer, whose population increased exponentially over the study period. The authors show the inverse relationship (one goes up while the other goes down) between orchid abundance and deer harvests, a correlate of the deer population (Figure 3).

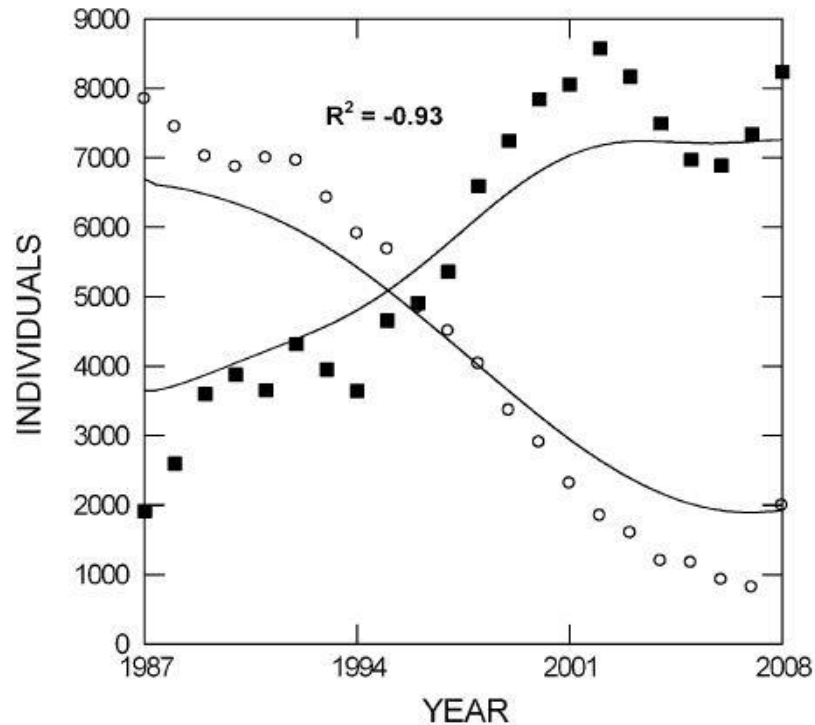


Figure 3. Inverse correlation of the deer harvest of Frederick County to overall orchid census. Squares are the number of deer harvested, circles are the individual orchids census. This graph and caption are originally from figure 4 of Knapp and Weigand (2014)

My jaw-dropping reaction was that I needed to share this information with the MCWA network. After all, many scientific papers are not widely-read by people not plugged into the academic world. As it turns out, this article was published as an open source article and is thus widely available. Timothy B. Wheeler, of the Baltimore Sun reported on the orchid study soon after it was published. His article, titled "[Orchid loss in Md. mountains laid to deer](#)" does a good job summarizing the science and also gives some interested background about the two ecologists who completed and authored the study.